

Regional Water Management in Bulgaria



Transferable Solution

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Project Title: Public/Private Project for Water Treatment and Delivery to the Haskovo Municipality and Surrounding Municipalities

Leader: The Municipality of Haskovo, Haskovo, Bulgaria

Partners: 1) Clearwater Consultants, Inc., Starkville, MS and 2) Povvik-Ep Ltd., Sofia, Bulgaria

Location: Haskovo Municipality, Bulgaria

Project Duration: October 2000 – May 2001

EcoLinks Project Investment: Total EcoLinks Project Investment: \$107, 531;
EcoLinks Grant Support: \$50,000; Project Team Cost Share Contribution: \$57,531.

Best Practice: Transferable Solution

This project was chosen as a Best Practice because it generates a strong framework for addressing regional water supply and wastewater treatment problems throughout Bulgaria. This EcoLinks funded project builds regional capacity to understand and address water management problems and provides notable environmental benefits. A knowledge base is created including results from a community Willingness-To-Pay Study, a review of existing water management practices, facilities, and applicable laws and regulations across ten municipalities, water consumption projections, and an economic analysis. Collaboration across municipalities and between municipalities, private enterprises, state governmental representatives, and local communities provides a participatory context that significantly improves implementation capacity. The environmental benefits of this project include water resource conservation and a reduction in air and surface water pollution.

Project Summary

Insufficient water supplies are a fact of life for most towns and villages in Bulgaria. Approximately 33% of all villages in Bulgaria have no water supply networks. Wastewater treatment is also lacking. Only 12% of Bulgarian towns have sewage systems. In the municipality of Haskovo and the eight other municipalities included in this project, water quality is poor; water pipelines are deteriorating or obsolete; the water supply is insufficiently managed; and water service charges are inappropriately high given local income averages and service quality.

Chlorination is the primary means of treating water. There are no wastewater treatment facilities in the region. Wastewater is frequently discharged directly into the Maritsa River or its tributaries.

Thirty-five percent of the settlements in the region included in this study experience annual or seasonal water shortages. Several municipalities have poor water quality due to elevated levels of manganese in addition to a lack of treatment facilities. Poorly functioning pipes contribute to a total water loss of 45%. Old pumping units contribute to high energy costs. Several initiatives to build municipal sewage systems have not been carried out to completion.

To address the water problems of the region, a Willingness-To-Pay Study and focus groups were conducted among the communities of the region. Most people in the region are unhappy with their water supply and would support efforts to improve water supply and treatment facilities. A survey of the water, sewage, and wastewater facilities of ten counties including Haskovo, Harmanli, Svilengrad, Simeonovgrad, Ljubimets, Ivailovgrad, Madjarovo, Mineralni Bani, and Stambolovo was conducted.

Using the Haskovo region in Bulgaria as a demonstration site, this project 1) encourages private/public partnerships and regional collaboration to address municipal and state water problems; and 2) establishes a sound scientific, community-based approach (Willingness-To-Pay Study and a review of the current facilities, the operating institutional framework, available technologies, and future financing mechanisms) to empirically assess and improve water supply and wastewater treatment.

The Willingness-To-Pay Study revealed that people are unhappy with the current state of water quality, water supply and management, and water prices. It further revealed that people are willing to pay more for water if water and wastewater treatment facilities are constructed and/or maintained. The project promotes environmental benefits including water resource conservation, reductions in air pollution, and decreases in surface water pollution.

This next section provides a detailed outline of the methods and materials applied in this project. This methodology can be used throughout Bulgaria to achieve the similar benefits (see Project Benefits section). The Willingness-To-Pay Study and the Tariff Study, for example, can be easily replicated in the water sector in other regions in Bulgaria.

Project Activities

The main activities of this project include a Willingness-To-Pay Study; an assessment of water, sewage, and wastewater treatment; a review of the legislative framework regarding water supplies, sewage, and wastewater management; and an assessment of financial opportunities. The municipalities studied were Haskovo, Harmanli, Svilengrad, Simeonovgrad, Ljubimets, Ivailovgrad, Madjarovo, Mineralni Bani, and Stambolovo.

1. Conducted a Willingness-To-Pay Study

Action: Questionnaires and survey materials were developed to identify main water supply problems from a community perspective, parameters and conditions for improving water supply, perspectives on water charges, and the communities' willingness to pay higher charges. A survey method involving face-to-face structured interviews was used. A group of 60 interviewers from Haskovo, Svilengrad, and Harmanli were trained to conduct interviews and record responses. A total of 1,847 people were interviewed. Additionally, three focus group discussions were held in Haskovo, Harmanli, and Svilengrad. The results were presented in two reports as listed below.

Product(s): 1) Study questionnaires and surveys 2) Willingness-to-Pay Final Report 3) Focus Groups Report

2. Assessed the current management system for water, sewage, and wastewater

Action: The status of water, sewage, and wastewater management was assessed for ten municipalities: Haskovo, Harmanli, Svilengrad, Simeonovgrad, Ljubimets, Ivailovgrad, Madjarovo, Mineralni Bani, and Stambolovo. The following features were described for each municipality: 1) water sources and water supply, 2) water treatment, 3) water supply system, 4) non-revenue water, and 5) wastewater treatment works. Based on the review, technical, institutional, and financial remedies were explored. An economic analysis involving calculations of the IRR and NPV for proposed system alternatives was conducted along with tariff projections for seven years involving two different scenarios. The present and expected (to year 2020) demand for water and wastewater treatment services by municipal and industrial users was determined using data from the Water Company and industry on consumption patterns and future needs.

Product(s): 1) Technical Investigation Report 2) Water demand projections 3) Economic Analysis and Tariff Study Report

3. Identified the legal and formal institutional framework for managing water, sewage, and wastewater

Action: Laws affecting permitting and operation of water systems were summarized. The permits and authorization needed to build and operate water management systems were clarified. In the final report, issues of privatization are reviewed; specific Acts are summarized; legal options/alternatives for privatization of water supply and

sewage and for private sector participation without stock or share transfers are discussed.

Product(s): 1) Preliminary Report on Relevant Laws, Regulations and Authorities 2) Final Report on Relevant Laws, Regulations and Authorities

4. Organized meetings with relevant industries, municipalities, and other governmental bodies on possibilities for a combined water and wastewater treatment system for the region

Action: Meetings were organized with relevant water industries and municipalities to consider participation in a combined water and wastewater treatment system.

Preliminary conclusions of the project were presented to the Mayor of Haskovo Municipality, the Head of the Department of Water Quality, and the Head of the Department of the Water Sector of the Ministry of Regional Development and Public Works.

Product(s): 1) Meeting notes

The next section outlines the particular benefits derived through this project. The benefits generated from this project in capacity building and the environmental arena are especially noteworthy.

Project Benefits

The benefits for this project include 1) a collaborative institutional framework for resolving water supply and treatment and wastewater treatment issues, 2) fortification of the ties between municipalities and the surrounding communities in efforts to address water supply problems, 3) improved knowledge base on the legal, technical, and economic factors regarding water management improvements, and 4) improved water resource conservation, and reduced air and surface water pollution. These benefits are outlined in more detail in the following subsections.

Capacity Building Benefits

This project built social capital in a number of ways:

- Most notably, it encouraged collaboration amongst counties to work on water supply and treatment problems from a regional rather than local perspective.
- Through the “Willingness-to-Pay” study, the project built ties with the surrounding communities and established an empirical knowledge base about water problems allowing the municipalities to better address community-based water problems. The community had the opportunity to articulate their concerns regarding regional water supply and management issues. Further, municipalities discovered that people are willing to pay more for better quality water services.

- Relationships between municipalities, the industrial sector, and other water resource and management governing bodies such as the Water Company and The Department of Water Quality were strengthened. This network lays the groundwork for promoting an integrative approach to addressing and solving water supply and treatment problems.

With the legislative framework guiding water issues in the region, the municipalities have built their capacity to proceed with improvements using the laws, regulations, and authorities to guide and structure them.

Environmental Benefits

The environmental benefits of this project include water resources conservation, reduced air pollution, and reduced surface water pollution. They can be quantified in the following manner:

- **Water Resources Conservation:** approximately 100,000 m³ per year of water is conserved by the proposed regional management system. This is sufficient to supply an additional 2000 people with water at a supply standard of 150 l/c/d.
- **Reduced Air Pollution:** due to energy efficiency, reductions in CO₂ are estimated at 1,100 tons per year (assuming 700 tons of CO₂ are produced per one megawatt of electricity).
- **Reduced Surface Water Pollution:** six hundred tons of BOD (biological oxygen demand) per year is avoided.

Economic Benefits

The implementation of a regional water management system as supported by this project improves water supply and water quality for ten municipalities. It secures the necessary economic framework and public/private partnerships. While the project emphasizes the feasibility of a public/private water treatment and delivery system, the economic benefits are derived from the regional versus local approach to water management and modernization and activation of treatment facilities. There are additional economic benefits from avoiding potential pollution mitigation costs and from promoting ecological values by reducing the environmental impacts on water resources.

With implementation of the water management system outlined in this project, infrastructure costs are reduced, and energy and water consumption is more efficient. For example, building one large-capacity water treatment plant (300 l/s) for the entire region versus seven small-capacity plants (50 l/s) produces noteworthy savings. Infrastructure costs of a regional water management approach are reduced by \$520,000. With an efficiently operating system, 1) energy savings can add up to \$511,752 per year, and 2) there is a 50% reduction in water consumption and a 50% reduction in leakages achieving a savings of \$39,772.

The next section, “Lessons Learned” provides a summary of the lessons learned during implementation of this project. They are key empirical insights that can be used by others seeking to improve water management in their region.

Lessons Learned

These are the lessons learned during implementation of this project. They especially emphasize the importance and benefits of a community-based, integrative approach to addressing water management problems.

- Conducting a Willingness-To-Pay Study provided important information about the surrounding communities’ perspectives on water supply issues. People are willing to pay for access to quality water.
- Consulting multiple municipalities and the community, engaging the private sector, and meeting with state officials created a network that will facilitate the implementation of an effective water management system.
- The research conducted as part of this project including the Willingness-To-Pay Study, the Technical Investigation Study, the Tariff Study, the Summary of Relevant Laws, Regulations and Authorities, and the Water Use Projections all provided a sound base from which to consider a regional, integrative approach to water management.
- Certain project activities were delayed pending authorization from the Ministry of Regional Development and Public Works (MRDPW) for the Water Company of Haskovo to provide technical information. The Municipality of Haskovo resubmitted a request letter once the Water Company was authorized to provide the requested information and the information was obtained.

The next section provides contact information on the people who designed and implemented this project.

Contact Information

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